Shelve in stacks S.B.J.

Highway Safety Literature

An Announcement of Recent Acquisitions. . .

HSL No. 71-32 December 31, 1971 HS-010 313 - HS-010 369,HS-800 535,549,574,&585,HS-810 177 & 180.

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HS-010 313 - HS-010 369
HS-800 535, 549, 574, & 585
HS-810 177 & 180
HS-820 164 - 166 & 168

U.S. Department of Transportation / National Highway Traffic Safety Administration

[redacted]

U.S. SUPT OF DOCS [redacted]

HIGHWAY SAFETY LITERATURE
AN ANNOUNCEMENT OF RECENT ACQUISITIONS

Published Bi-Weekly (26 times a year) by the National Highway Traffic Safety Administration
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INTRODUCTION

Publications announced in *Highway Safety Literature* include the most recent additions to the collection of the NHTSA Scientific & Technical Information Service. Subject areas covered include all phases of highway, motor vehicle, and traffic safety, especially those encompassed by the National Traffic and Motor Vehicle Safety Act of 1966 and the Highway Safety Act of 1966.

Individual issues of *HSL* are numbered according to the year and the issue number within that year; thus, 71 designates the year and 1, 2, 3, etc. the individual issues. To aid the user in locating citations by the HS-number, the cover bears the inclusive entry number for each issue.

Entries in *HSL* are arranged according to the NHTSA Subject Category List shown in the Table of Contents. The list is a two-level arrangement consisting of five major subject fields subdivided into 59 subject groups. Documents related directly to the National Highway Traffic Safety Administration (NHTSA) are announced in a separate section headed NHTSA DOCUMENTS and are numbered in five distinct series: NHTSA Accident Investigation Reports (HS-600 000 series). NHTSA Compliance Test Reports (HS-610 000 series), NHTSA Contractors Reports (HS-800 000 series), NHTSA Staff Speeches, Papers, etc. (HS-810 000 series), and NHTSA Imprints (HS-820 000 series). For NHTSA DOCUMENTS in series HS-600 000 and HS-610 000, individual full case reports are available for inspection at the National Highway Traffic Safety Administration. HS-800 000 series and HS-800 000 series are available fo purchase from NTIS or GPO (see page ii). Although announce together in a separate section, these documents are also assigned specific subject categories for machine retrieval.

A document which contains a number of separate articles is announced as a complete volume in the subject category most applicable to it as a whole. Entries for the individual articles appear in their most specific subject category.

SAMPLE ENTRIES

Subject Category Array	
NHSB Accession no......	HS-800 218 Fld. 5/21; 5/9
Title of document.........	AN INVESTIGATION OF USED CAR SAFETY STANDARDS–SAFETY INDEX: FINAL REPORT. VOL. 6 - APPENDICES G-L
Personal author(s).........	by E. N. Wells; J. P. Fitzmaurice; C. E. Guilliams; S. R. Kalin; P. D. Williams
Corporate author..........	Operations Research, Inc.
Collation	
Publication date............	1969 150p Contract FH-11-6921 Report no. ORI-TR-553-Vol-6; PB-190 523
Abstract........................	Appendices G-L to this study of used car safety standards include: indenture model diagrams for classes I-IV motor trucks; degradation, wear, and failure data for motor truck classes I-IV; and safety index tables for classes I-IV motor trucks.
	Search terms; Wear; Trucks. Failures; Used cars; Inspection' standards
	AVAILABILITY: NTIS

HS-004 497 Fld. 5/19

AUTO THEFT–THE PROBLEM AND THE CHALLENGE

by Thomas A. Williams, Sr.

Journal citation . . . Published in *FBI Law Enforcement Bulletin* v37 n12 p15-7 (Dec 1968)

Gives figures on the extent of the auto theft problem and comments on antitheft devices available now or in the planning stage.

Search terms: Theft; Theft protection; Stolen cars

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NOTE: ( ) Numbers in parentheses following certain subject groups indicate the Highway Safety Program Standards (No. 1, and up) and/or Federal Motc. Vehicle Safety Standards (No. 101 and up) which may apply to these groups.

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NOTE: Material published in Highway Safety Literature (HSL) is intended for the information and assistance of the motor vehicle and highway safety community. While brand names, equipment model names and identification, and companies may be mentioned from time to time, this data is included as an information service. Inclusion of this information in the HSL should not, under any circumstances, be construed as an endorsement or an approval of any particular product, course, or equipment by the U. S. Department of Transportation, National Highway Traffic Safety Administration.

Harry A. Feinberg
Managing Editor

AVAILABILITY OF DOCUMENTS AND INSTRUCTIONS FOR ORDERING

Articles and reports whose citations and abstracts appear in HSL are acquired from many sources, such as periodicals, journals, NHTSA Contractors' reports and NHTSA staff speeches, and other reports. Those reports other than NHTSA Contractors' reports and NHTSA generated reports and speeches (see introduction) are assigned a lower consecutive accession (HS-) number.

Department of Transportation presonnel may borrow copies of publications announced in HSL from the NHTSA Technical Reference Division. Non-DOT Personnel, in the Washington, D.C. area, may borrow copies of publications for a 24-hour period only. Telephone (202) 426-2768. Government personnel in the Washington, D.C. area, use government ID phone 118-62768.

The names of the journals cited in HSL appear in italic type preceded by the words "Published in." The journal containing the article cited may be borrowed from most research and public libraries. Non-DOT personnel ouside the Washington area should contact their company or agency libraries for assistance.

NHTSA Contractors' reports and other reports can usually be obtained as indicated under AVAILABILITY. However, there is no certainty that copies will be available for more than a limited period after a report is issued.

The more common availability sources are identified by symbols which are explained in the next column:

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GPO: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Give corporate author, title, personal author, and report number . Prepayment is required by GPO coupon (NTIS coupons are not acceptable), check or money order (made payable to the Superintentent of Documents).

HRB: Highway Research Board, National Academy of Sciences, 2101 Constitution Ave., N. W., Washington, D. C. 20418.

NHTSA: National Highway Traffic Safety Administration, General Services Division, Washington, D.C. 20590 (Telephone (202) 426-0874), Give HS-No.

SAE: Society of Automotive Engineers, Dept. HSL, 2 Pennsylvania Plaza, New York, N.Y. 10001. Order by SAE report numbers. Prices given are list; discounts are available to SAE members and sometimes to libraries and U.S. Government Agencies. Prepayment is required; orders received without payment are subject to a $1 handling charge.

IMPORTANT NOTICE

WHEN REQUESTING a document, to be absolutely sure you receive what you order, give the accession number (HS, PB, AD number) or report number (in cases such as an SAE document), title of report, and the personal or corporate author (whichever is cited). When requesting an HS-numbered document from NTIS, add DOT/to the prefix HS-; example HS-800 000 should be ordered as DOT/HS-800 000.

1/0 ACCIDENTS

1/2 Injuries

HS-010 313 Fld. 1/2

SEAT BELT INJURIES OF THE SPINE AND ABDOMEN

by John R. Dehner

Published in *American Journal of Roentgenology, Radium Therapy, and Nuclear Medicine* v111 n4 p833-43 (Apr 1971)

24 refs

Although the safety value of automobile seat belts has been proven, the seat belt is capable of producing serious injury to the spine and intra-abdominal contents during an abrupt deceleration crash. The trauma to the spine is produced by severe flexion of the torso over the belt, causing a tearing of the posterior elements, with less involvement of the vertebral bodies. Following seat belt trauma to the abdomen, the most common injury is perforation of the small bowel with associated trauma of its mesentery. Multiple injuries are common and combined injuries of the spine and intra-abdominal contents occur. The shoulder harness used with the lap belt should be evaluated to replace the lap-and-diagonal belt, along with other structural improvements in automobile design.

Search terms: Medical case reports; Seat belt medical factors; Abdominal injuries; Seat belt caused injuries; Intestinal injuries; Spinal injuries; Fractures; Diagnosis; Medical treatment; Injury case reports

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HS-010 314 Fld. 1/2

SEAT BELT INJURIES: A REVIEW AND REPORT OF FOUR CASES

by Girard Seitter, 3rd; John H. Sharp

Published in *Military Medicine* v135 p215-7 (Mar 1970)

10 refs

Four cases of seat belt injuries are presented and reviewed. Emphasis is put on the possible paucity of early clinical findings in seat belt abdominal injuries, and the consequent need for a high index of suspicion of closed abdominal trauma. It is recommended that a liberal attitude be adopted in the decision to resect questionably compromised bowel in the region of the distal ileum and cecum, due to the potentially inadequate collateral blood flow through ileocolic "end arteries." The value of seat belts in decreasing injury and death due to high velocity accidents is not questioned.

Search terms: Abdominal injuries; Intestinal injuries; Seat belt caused injuries; Diagnosis; Seat belt medical factors; Medical case reports; Medical treatment; Injury case reports

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HS-010 315 Fld. 1/2

BLUNT ABDOMINAL TRAUMA

by Frederick Menick; Matthew C. C. Kim

Published in *New York Journal of Medicine* v70 p1897-902 (15 Jul 1970)

6 refs

Salient points in examination and diagnosis of blunt abdominal trauma are presented, with illustrative cases. Recent observations of several cases of intra-abdominal injuries occurring after blunt trauma are presented. Emergency measures, diagnosis of the trauma and surgical treatment are suggested.

Search terms: Abdominal injuries; Internal injuries; Multiple injuries; Head injuries; Medical treatment; Diagnosis; Medical case reports; Injury case reports

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HS-010 316 Fld. 1/2; 5/14; 1/5

INFORMATION ON INJURIES OBTAINED FROM REPORTS OF ACCIDENTS TO CAR OCCUPANTS WEARING SAFETY BELTS

by G. Grime

University Coll. (England)

Published in HS-010 357, *Conference on Road Safety. Vol. 1. Biomechanics of Accidents,* Brussels, 1968 pA8-(1-32)

8 refs

Summaries in French, Dutch, and German.

An analysis of accident reports, returned to a safety belt manufacturer, showed that about two-thirds of the injuries to wearers of lap-and-diagonal belts were caused by striking parts of the car, and only one-third were due to restraining forces due to belts. Leg, knee, and arm injuries caused by impact with parts of the car were comparatively numerous and severe. Many leg and knee injuries are probably preventable by changes in the design of the car interior. Injuries due to the belt were mainly to shoulder, chest, ribs, and neck. Neck injuries were rarely serious. Automatic belts were more effective than ordinary lap-and-diagonal belts, particularly in preventing head injury to the driver.

Search terms: Seat belt caused injuries; Injury prevention; Seat belt effectiveness; Passive restraint systems; European vehicles; Seat belt design; Accident reports; Seat belt usage; Head on collisions; Side impact collisions; Single vehicle accidents; Speed; Passengers; Driver behavior; Restraint system effectiveness; Rear end collisions; Head injuries; Leg injuries; Knee injuries; Arm injuries; Internal injuries; Neck injuries; Injuries by seat occupation; Injury statistics; Data acquisition; Automobile interior design; Chest injuries; Shoulder injuries; Accident types; Restraint system design; Intersection collisions; Injury causes

1/3 Investigation

HS-010 317 Fld. 1/3; 1/2; 1/5

ACCIDENT RESEARCH: METHODS AND APPROACHES

by William Haddon, Jr.; Edward A. Suchman; David Klein

Published by Harper and Row, New York

1964 764p refs

Prepared in cooperation with the Association for the Aid of Crippled Children.

The book presents significant studies in accident research, and embeds there studies in a text dealing with the methodologies used. It extends the concepts of preventive medicine and related disciplines to the study of accidents. Methods and approaches include causation, safety as a social value, epidemiology, behavioral research and psychology, accident proneness, social and cultural factors, injury determinants, and accident prevention. Various accident types are considered in the studies examined: agricultural, aircraft, poisoning, children, old people and environmental effects. Emphasis is on motor vehicle accidents. Each accident study included is commented upon individually.

Search terms: Accident research; Accident causes; Accident factors; Accident investigation; Accident prevention; Accident proneness; Accident rates; Accident reports; Accident studies; Accident survivability; Aircraft accidents; Vehicle accidents; Human factors; Alcohol effects; Barrier collision tests; Epidemiology; Data acquisition; Systems analysis; Accident statistics; Age factor in accidents; Fatalities; Age factor in driving; Driver skills; Depth perception; Risk taking; Poisoning; Children; Sex factors in accidents; Accident types; Urban accidents; Great Britain; New York (City); Falls; Adults; Heaters; Single vehicle accident; Roadside hazards; Adult pedestrians; Pedestrian fatalities; Sociological factors; Psychological factors; Driver personality; Pedestrian characteristics; Drinking drivers; Driver behavior; Industrial accidents; Adolescent drivers; Young adult drivers; Driver attitudes; Fatality rates; Homicide; Suicide; Traffic law violations; Pilots; Human deceleration tolerances; Head injuries; Case reports; Burns; Recreational accidents; Driver education; Driver improvement; Intersection collisions; Signalized intersections; Instrument panel caused injuries; Restraint system tests; Seat belt usage

HS-010 318 Fld. 1/3; 2/8

WEAKNESSES IN TRAFFIC ACCIDENT INVESTIGATION

by James M. Slavin

Published in *FBI Law Enforcement Bulletin* p2-6, 17-20 (Feb 1968)

Police usually obtain basic accident data competently, but often fail to go beyond the requirements of the accident report form. Case studies are given and common weaknesses are cited: inability to properly identify and correlate road marks and vehicle damage, to make exact, meaningful measurements related to specific tires and exact road locations, and to distinguish facts from opinions and explanations. Use of police data to guide safety programs will require additional training for investigations.

Search terms: Accident investigation; Accident reconstruction; Police reports; Accident case reports; Accident causes

1/5 Statistical Data

HS-010 319 Fld. 1/5

FATAL AND INJURY MOTOR VEHICLE TRAFFIC ACCIDENTS. 1970 REPORT

California Dept. of Hwy. Patrol

1971 90p

Data are presented in ten-year summaries, by location, time (month, day of week, hour, light condition), characteristics of vehicles and drivers, characteristics of victims, school-bus accidents, and type of vehicles. Non-injury accidents are omitted because of unknown extent of reporting. The 1970 mileage death rate declined 6.7% from the previous year. The fatal accident rate declined 3.4% and the injury accident rate declined 1.0% from the previous year.

Search terms: Accident statistics; Injury statistics; Fatality rates; Accident location; Driver age; Environmental factors; Accident types; Vehicle characteristics; School bus accidents; Age factor in accidents; Time of day; Fatalities by age; Fatalities by sex; Pedestrian accidents; Pedestrian characteristics; Traffic accidents; Driver characteristics; Driver sex; California; Time of accidents; Month; Day of week; Sex factors in accidents

HS-010 320 Fld. 1/5

G. L. C. ACCIDENT STATISTICS SYSTEM ACCIDENT DESCRIPTIONS

by E. D. Turner

Greater London Council (England)
and Transp.

1969 24p 12 refs
Report no. T.M. 20

The new system for distributing road accident data in the Greater London area came into effect on 1 January 1969. It involves a number of changes and in particular it does not include a clear language summary of how each accident occurred nor information on its apparent cause. The reasons for this omission are explained in terms of the need for facts and not opinions. The application of these facts is by statistical methods and it is observed that remedial action on the basis of one isolated accident may perhaps avert an isolated accident, but that action on the basis of data from a number of accidents is likely to prevent a number of accidents. The objective of the system is to make the best use of available resources in reducing the number and severity of accidents.

Search terms: Accident statistics; Benefit cost analysis; Data acquisition; Accident analysis; Accident causes; Accident location; Accident prevention; Accident reports; Information system design; London; Accident rates; Accident costs; Statistical analysis; Accident types

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HS-010 321 Fld. 1/5

THE GLC ROAD ACCIDENT STATISTICS SYSTEM—A DESCRIPTION AND PROGRESS REPORT

by E. D. Turner

Greater London Council (England)

1970 17p 7 refs
Report no. T.M. 53

Presented at University of Surrey Residential Course in Traffic Management, Sep 1970.

The Greater London Council accident statistics system is computer based and takes as a data source the information provided by the metropolitan police for road accidents involving personal injury. The objective of the system is to provide data which can be used in planning measures to reduce the number of accidents. Design selections made are detailed and reasons given. Plans for future development in interrogation programs and integrated data files are outlined.

Search terms: Data acquisition; Accident rates; Benefit cost analysis; Accident causes; Accident costs; Highway improvements; Accident location; Accident prevention; Accident statistics; Accident types; London; Information system design

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2/0 HIGHWAY SAFETY

2/2 Communications

HS-010 322 Fld. 2/2

STATE OF THE ART RELATED TO REAL-TIME TRAFFIC INFORMATION FOR URBAN FREEWAYS

by Conrad L. Dudek

Texas A and M Univ. Texas Transp. Inst.

1970 60p 32 refs
Report no. RR-139-2; PB-199 079; Study-2-8-69-139

Sponsored by the Texas Hwy. Dept. in cooperation with Federal Highway Administration.

An examination of the state of knowledge was conducted for the purpose of evaluating methods of providing the urban freeway driver with real-time traffic information. Visual and audio methods of communication were considered to be most feasible for implementation. The state of the art was therefore focused on systems requiring the use of these two methods. The report presents a comprehensive review of existing and proposed systems which are capable of communicating with the driver while he is in his vehicle. The systems were classified according to whether they displayed or provided information to the driver external to the vehicle or within the vehicle. Additional research on the application of commercial radio is recommended. Changeable message signs appear to be promising. Driver preferences for freeway traffic information should be further evaluated.

Search terms: State of the art studies; Driver aid systems; Radio communication; Highway communication; Citizens band radios; Highway signs; Speed signs; Visual aids; Changeable message signs; Freeway driving; Traffic information signs

AVAILABILITY: NTIS

2/4 Design and Construction

HS-010 323 Fld. 2/4

STEEL MEDIAN GUARDRAIL PROTECTS TURNPIKE MOTORISTS

Anonymous

Published in *Better Roads* v39 n8 p18-22 (Aug 1969)

With completion of the last section of the Pennsylvania Turnpike, 470 miles of galvanized steel guardrail protect turnpike motorists from head-on, cross-over collisions. Design of the barrier and some problems of installation on such a massive scale are described.

Search terms: Median barrier design; Guardrail design; Median crossover collisions; Head on collisions; Pennsylvania

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2/5 Lighting

HS-010 324 Fld. 2/5

PUBLIC LIGHTING IN URBAN AREAS

by H. O. Westermann

Published in *Road International* v81 p11-5, 17 (Jun 1971)

Public lighting has evolved from its function of safeguarding pedestrian life and property to meet requirements of traffic safety and should be part of a concept for the integrated use of light in an urban environment. Color of light is important for different uses, and roads might well be differentiated in this way. Modern practice is concerned with the light reflected from a road surface, not illumination levels alone, and good lighting design requires early consultation with urban and highway designers. The discussion includes lighting of traffic areas, residential and recreational areas, and esthetics.

2/5 Lighting (Cont'd.)

HS-010 324 (Cont'd.)

Search terms: Urban lighting; Street lighting; Highway lighting; Lighting equipment; Brightness; Pavement reflectivity; Lighting design; Colored pavements

HS-010 325 Fld. 2/5; 4/3

THE LIGHTING OF MOTORWAYS

by Granville Berry

Published in *Roads and Road Construction* v47 p388-90 (Dec 1969)

Extracted from *The Lighting of Motorways in Western Europe.*

Highway lighting can reduce night accident rates by 24% to 48%. In Western Europe it has become virtually accepted practice to light urban roads and main interchanges on rural motorways. Lighting systems vary in design. Economic and social benefits of highway lighting and priorities in lighting are discussed.

Search terms: Lighting design; Priorities; Europe; Highway lighting; Accident rates; Benefit cost analysis; Day vs night accident risks; Urban lighting; Rural lighting; Lighting equipment costs; Interchanges

2/9 Traffic Control

HS-010 326 Fld. 2/9

TRAFFIC FLOW ANALYSIS BY RADAR

by K. L. Fuller; A. J. Lambell

Published in *Traffic Engineering and Control* v13 n3 p102-4 (Jul 1971)

The introduction of solid-state microwave sources and stripline microwave components has made low-power radar systems economic for civilian applications. An experimental solid-state Doppler radar system has been used to investigate the possibilities of using radar to measure traffic speed as an aid to traffic control. The radar has been used on the overhead section of the M4 motorway in West London. Comparison of the speed indications of the radar with the television coverage of the same stretch of motorway show that the radar gives a reliable indication of obstructions and delays with a negligible number of false alarms.

Search terms: Radar; Traffic surveillance; Closed circuit television; Speed sensors; London; Urban traffic flow

HS-010 327 Fld. 2/9

SPEED ON LEVEL RURAL ROADS: A MULTIVARIATE APPROACH. 3. THE SPEED MODELS PRODUCED

by C. A. O'Flaherty; R. D. Coombe

Published in *Traffic Engineering and Control* v13 n3 p108-11 (Jul 1971)

1 ref

Models derived from the study of vehicle speeds on lightly-trafficked two-lane level rural roads in the north of England are given, and some conclusions which may be drawn from them are discussed. Fourteen factors were studied. Three main groups of variables were found important in regard to speed: properties of horizontal curvature; parameters of heavier traffic flows and percentages of platoons; variables of traffic composition, especially vehicle type and occupancy.

Search terms: Speed studies; Speed patterns; Speed differential; Highway design speed; Linear regression analysis; Traffic flow; Great Britain; Multivariate analysis; Vehicle characteristics; Road curves; Platoons; Vehicle occupancy

HS-010 328 Fld. 2/9

KENYA 60-POINT TRAFFIC CENSUS: DESIGN AND RESULTS FOR 1970

by J. D. G. F. Howe

England Road Res. Lab.

1971 28p 3 refs
Report no. RRL-LR-398

The design of a 60-point traffic census in Kenya and its results for 1970 are described. An analysis is made of the daily flows at each site, the percentage composition of the traffic, and the amount and distribution of daily travel. It is estimated that 25% of rural roads carry fewer than 10 vehicles per day and only 11% carry more than 1000 vehicles per day. Over 66% of all travel takes place on the 14% of the rural road system designated as trunk routes. Minor roads comprising 45% of the rural road length carry only 7% of all travel. The results also suggest that developed and developing countries have a similar asymmetrical distribution of travel over their road systems, e.g. 50% of the traffic is on the 5% busiest roads. There are wide variations in the amount of travel in different provinces, which are not explained by the size of the populations. The proposal to introduce automatic counters at 25 of the sites to monitor traffic flows continuously, and other census improvements are discussed.

Search terms: Traffic counts; Traffic surveys; Traffic flow; Traffic volume; Travel by vehicle type; Travel patterns; Highway usage; Traffic counters; Kenya; Rural roads; Highway mileage; Highway characteristics

2/11 Traffic Records

HS-010 329 Fld. 2/11; 1/3; 4/5

RESEARCH AND TRAFFIC RECORDS

by J. Stannar Baker

Published in *Traffic Digest and Review* v19 n7 p8-10 (Jul 1971)

Based on a paper presented at the Annual Meeting of the HRB.

Traffic records, which are mainly the responsibility of state and local governments, fall in the categories of roads (highways, traffic, accidents), drivers (licensing, examination, accidents, law violations), accidents (reports, investigations, injuries and fatalities), enforcement (police, courts, citations and convictions), and vehicles (ownership, identification, registration, sales, inspection, mileage). Private records are maintained by insurance companies, manufacturers, fuel companies, and others. Mere recordkeeping involves such costs and effort that resources left for research are meager, though an important justification of records is analysis for decision making. Significant voids in traffic records are enforcement pressure, automobile classification, accident severity and completeness of reporting. Massive data processing results in floods of raw data without specifics for actions. Special data collection and bilevel reporting may be an answer.

Search terms: Traffic research; Driver records; Accident records; Traffic data reduction; Traffic records

3/0 HUMAN FACTORS

3/1 Alcohol

HS-010 330 Fld. 3/1

HIGHWAY SAFETY CHIEF URGES SOCIETY TO GET TOUGH WITH ALCOHOLIC DRIVER

Anonymous

Published in *Government Executive* v1 n6 p40-2 (Aug 1969)

Motor vehicle accidents killed 55,000 Americans in 1968 and alcohol, particularly its use by chronic alcoholics, is blamed for upward of 50% of the still rising traffic death toll. Dr. Robert Brenner, Acting Director of the Department of Transportation's National Highway Safety Bureau, favors procedures under which doctors would report chronic alcoholics to license bureaus. Safety standards for vehicles in use, restraint systems, and other aspects of the highway safety problem are briefly discussed.

Search terms: Alcohol usage deterrents; Alcohol laws; Alcoholism; Blood alcohol levels; Restraint systems; Drinking drivers; Driver license standards; Used cars; Highway safety; Problem drivers; Vehicles safety standards; Federal role

HS-010 331 Fld. 3/1

PROBLEM DRINKING V. PUBLIC SAFETY

by Marvin Wagner

National Hwy. Safety Bureau

Published in *TRIAL Magazine* v7 n3 p26, 28, 30 (May/Jun 1971)

Excerpts from a statement by Marvin Wagner of the Office of Alcohol Countermeasures are presented. The problems of drunken drivers on the highway, in general aviation, railroad transportation, and marine transportation, are outlined. The five-part program of countermeasures directed toward the "problem drinker" involves: development of comprehensive community alcohol safety action programs; state assistance through annual work plans; state legislative technical assistance and judicial information programs; public education and manpower training programs; and research and development. The responsibilities of the legal profession in the handling of drunk driving cases are discussed. The deterrent effects of liquor control laws and legal actions taken as a result of negligent sales of liquor are shown. Stricter enforcement of state statutes prohibiting the sale of liquor to intoxicated persons is urged. Alcohol-involved highway fatalities are estimated to represent 40% of all fatalities in all transportation modes.

Search terms: Drinking drivers; Alcohol laws; Alcohol usage deterrents; Social drinking; Driver intoxication; Drinking pedestrians; Air transportation; Marine transportation; Rail transportation; Legal factors; Fatalities

HS-010 332 Fld. 3/1

ANALYSING FOR ALCOHOL

by R. C. Denney

Published in *Chemistry in Britain* v6 p533-5 (Dec 1970)

13 refs

The Road Safety Act introduced the breath test and attendant analyses of blood and urine samples in Great Britain. The breath test and breathalyzer equipment are described. The laboratory tests for ethanol levels in blood and urine are being replaced by the faster, more accurate gas chromatography method.

Search terms: Blood alcohol levels; Urine alcohol levels; Alcohol breath tests; Breathalyzers; Alcohol chemical tests; Alcohol laws; Ethanols; Gas chromatography; Great Britain; Drinking drivers; Road Safety Act of 1967 (Great Britain)

HS-010 333 Fld. 3/1; 4/2

ALCOHOLISM AND THE DRINKING DRIVER

by George H. Stewart

Michigan State Police

1969 12p

Presented at the annual meeting of the Assoc. of State and Provinical Safety Coordinators, 27 Oct 1969.

Outlines of what could be done at the state level or at the community level to

3/1 Alcohol (Cont'd.)

HS-010 333 (Cont'd.)

marshall resources for a concerted effort in dealing with the drinking driver are given. Steps in developing a structure for a state-wide attempt to resolve the drinking driver problem are presented. The ambiguity of the public's attitudes toward drinking drivers is discussed, and the role of problem drinkers in accidents is described.

Search terms: Alcoholism; Drinking drivers; Alcohol usage deterrents; Driver intoxication; Community support; Public opinion: Problem drivers; Accident factors

HS-010 340 Fld. 3/1; 3/9; 1/3

RISK OF CAUSING A FATAL ACCIDENT ASSOCIATED WITH ALCOHOLISM, PSYCHOPATHOLOGY, AND STRESS: FURTHER ANALYSIS OF PREVIOUS DATA

by Berthold Brenner; Melvin L. Selzer

Published in *Behavioral Science* v14 p490-5 (Nov 1969)

2 refs

In previous studies, the characteristics of 96 drivers, judged responsible for accidents involving one or more deaths, were compared with those of a control sample of the same size. This is a further analysis of the same data aimed at estimates of the extent to which alcoholism, certain manifestations of psychopathology, and recent stressful events tend independently and in combination to increase the risk of a driver causing a fatal accident. Some estimates of risk are given but replication and further study are needed.

Search terms: Psychopathology; Alcoholism; Drinking drivers; Alcohol effects; Accident proneness; Accident responsibility; Stress (psychology); Problem drivers; Accident risks; Driver intoxication; Accident factors; Driver performance under stress; Accident risk forecasting; Driver mental fitness; Driver physcial fitness; Statistical analysis; Psychological factors; Driver characteristics

3/4 Driver Behavior

HS-010 334 Fld. 3/4

DRIVING PATTERNS FOR DIFFERENT-SIZED VEHICLES

by Jane E. James; Morton Goldman

Published in *Ergonomics* v14 n3 p363-9 (1971)

5 refs

This study was concerned with examining driver patterns for three different sized vehicles (small cars, family cars, trucks, and buses) through an intersection controlled by a traffic signal. Records were kept as to whether the drivers were male or female and whether they were alone or with passengers. Results were found showing that family car drivers were the most cautious and that small car, truck, and bus drivers were approximately similar to each other, being less cautious. Drivers with passengers were more cautious and did not violate the law by passing a red light as frequently as did drivers without passengers. Different driving patterns were obtained for the three sizes of vehicles during morning, noon and afternoon, when there was precipitation and no precipitation.

Search terms: Driver behavior; Vehicle size; Driver sex; Traffic signal violations; Male drivers; Female drivers; Truck drivers; Bus drivers; Time of day; Wet road conditions; Dry road conditions; Compact automobiles; Signalized intersections

HS-010 335 Fld. 3/4; 1/3; 1/5

DRIVER IMMATURITY—A KEY TRAIT IN FATAL ACCIDENTS

by Noel F. Kaestner

Oregon Dept. of Motor Vehicles

[196–] 17p 1 ref

Records of 904 licensed Oregon drivers involved in fatal accidents (1961-62) were compared to those of a randomly selected control group from the general driving population. The expected disproportionate number of males and young, inexperienced drivers of both sexes was noted. As a group, these drivers had atypical driving histories, having more accident and conviction entries on their records, and much more likelihood of having had a traffic conviction within the 12 months immediately prior to the fatal accident. Analysis of the high conviction records of the male drivers revealed that certain violation types were especially characteristic of the fatal accident group. Exceptionally prominent was the tendency of the male fatal accident drivers in their 30's, 40's, and even older, to have conviction patterns similar to those of the youngest drivers in the control group. These data suggest that fatal accident drivers, as a group, may possess less maturity than ordinarily expected for their respective chronological ages.

Search terms: Driver behavior; Fatality rates; Traffic law violators; Problem drivers; Male drivers; Maturity; Driver age; Driver characteristics; Driver experience; Driver personality; Driver records; Driver sex; Accident rates; Accident statistics; Oregon; Traffic law violations; Driver fatalities

HS-010 336 Fld. 3/4; 3/6

THE INFLUENCE OF PERSONAL COMMUNICATION ON THE DRIVING BEHAVIOUR OF PRIVATE MOTORISTS IN ISRAEL

by G. Ben-David; I. Levin; Y. Haliva; N. Tel-Nir

Bar Ilan Univ. (Israel)

[1971] 59p 20 refs

The influence of advisory letters on driving behavior has been studied at eleven urban traffic intersections in Israel. Regular observation was carried out at these intersections, concentrating on two types of incorrect driving behavior–failure to stop at a stop sign, and disregarding direction arrows in driving lanes at an intersection. Experiment design permitted studying the same driver at more than one intersection along his regular route. Three types of letter were used for the offending dirvers graded by their degree of threat. All three letters showed a reduction in the rate of driving errors in the range 20% to 50% for a period of up to six months after sending the advisory letter. No appreciable change was recorded for the control group. After a period of six months two types of communication reinforcement were applied–an interview and a letter listing the full record of driving errors–both gave an additional reduction in the rate of driving errors. This program of driver education was unrelated to any legal sanctions.

Search terms: Driver behavior; Warning letters; Driver errors; Driver records; Traffic law violations; Traffic law violators; Intersections; Israel; Stop signs; Traffic lanes; Threat; Driver improvement; Statistical analysis; Driver behavior research; Reinforcement (psychology)

3/7 Drugs Other Than Alcohol

HS-010 337 Fld. 3/7

DANGER! DRIVERS AT RISK–2

by Keith Jolles

Published in *Nursing Times* v65 n52 p1652-4 (25 Dec 1969)

1 ref

The dangers of driving while under the influence of drugs are described. The effects of marijuana, tranquilizers, antihistamines, drugs against travel sickness, opiates, and amphetamines on the unsuspecting driver are discussed. Synergism is also explained.

Search terms: Drug caused accidents; Drug effects; Amphetamines; Antihistaminics; Tranquilizers; Synergism; Marijuana; Barbiturates; Hypotensive agents; Driver physical fitness; Hallucinogens

HS-010 338 Fld. 3/7

DETERMINATION AND IDENTIFICATION OF SYMPATHOMIMETIC AMINES IN BLOOD SAMPLES FROM DRIVERS BY A COMBINATION OF GAS CHROMATOGRAPHY AND MASS SPECTROMETRY

by Roger Bonnichsen; Andreas C. Maehly; Yvonne Marde; Ragnar Rhyage; Bertil Schubert

Published in *Zeitschrift fur Rechtsmedizin* v67 p19-26 (1970)

16 refs

Text in English with German summary.

Gas chromatographic and mass spectrometric data concerning the analysis for certain sympathomimetic amines in blood samples from drivers are presented. In all cases where gas chromatography gave peaks at the correct retention times for amphetamine or phenmetrazine respectively, mass spectrometry confirmed the presence of the corresponding drugs in the extracts from blood. Drug-free blood samples gave neither gas chromatographic nor mass spectrometric responses at the retention times characteristic for amphetamine or phenmetrazine. Computer-drawn mass spectra of phenmetrazine are shown. Analytical data obtained from twelve drivers and one hospital patient are collected in the table. The study was performed with drug abusers in Sweden.

Search terms: Blood analysis; Amphetamines; Gas chromatography; Mass spectrometry; Amines; Drug addiction; Sweden; Phenmetrazine; Sympathomimetics

HS-010 339 Fld. 3/7

DANGER! DRIVERS AT RISK–1

by Keith E. Jolles

Published in *Nursing Times* v65 n51 p1615-7 (18 Dec 1969)

The dangers of driving while under the influence of drugs are exposed. An appeal is made to casualty, ophthalmic and dental nurses, to make sure that patients who come in for treatment don't drive their cars after taking pupil-dilating drugs or having been under light anesthesia. The effects of aspirin, paregoric and amphetamines are also discussed.

Search terms: Drug caused accidents; Drug effects; Amphetamines; Analgesics; Anesthetics; Tranquilizers; Physicians and highway safety; Driver physical fitness

3/11 Pedestrians

HS-010 341 Fld. 3/11; 4/7

FOCUS ON PEDESTRIAN SAFETY. DELAYS TO PEDESTRIANS CROSSING A ROAD

by Robert Ashworth

3/11 Pedestrians (Cont'd.)

HS-010 341 (Cont'd.)

Published in *Traffic Engineering and Control* v13 n3 p114-5 (Jul 1971)

12 refs

Justifications for pedestrian subways or bridges in urban areas are convenience and safety. Several studies of pedestrian gap acceptance and evaluation of delays are described. A simulation model to determine average pedestrian delay was used. About 82% of the critical gap acceptances lie within the range of 2-6 seconds. With traffic volume of the order of 1,500 vehicles per hour, average pedestrian delay is less than 10 seconds. Even when a separated crossing is provided, pedestrians may not make use of it.

Search terms: Pedestrian crossings; Gap acceptance; Pedestrian behavior; Pedestrian bridges; Mathematical models; Computerized simulation; Simulation models; Waiting time; Traffic volume

HS-010 342 Fld. 3/11

SUMMARY OF FIRST YEAR OF PEDESTRIAN PROJECT PS 70-001 (001)

by Donald W. Rector

Los Angeles Unified School District

1970 46p

The objectives of the project are: a safety education program for school age pedestrians; development of traffic safety standards for pedestrians; a list of variables affecting school age pedestrians; a definition of the current pedestrian safety school program; an environmental and behavioral survey of the school age pedestrian; the installation of a pilot program; and a means of evaluating the program against state and federal standards for pedestrian safety.

Search terms: Pedestrian safety; Pedestrian education; Pedestrian behavior; Young pedestrians; Pedestrian characteristics; Child safety education; Safety standards; Program evaluation

5/0 VEHICLE SAFETY

HS-010 343 Fld. 5/0; 5/4

ASPECTS OF VEHICLE SAFETY

by Louis C. Lundstrom

General Motors Corp.

1970 13p

Presented at National Assoc. of Independent Insurers, Miami Beach, 18 Nov 1970.

The automotive industry is developing safer cars to reduce damage costs and protect the passengers. Bumpers will absorb shocks of minor collisions, air bags and other systems will reduce injuries, antitheft devices will reduce car theft, and test devices will prevent drunk driving.

Search terms: Automobile design; Vehicle safety; Damage costs; Depair costs; Crashworthiness; Occupant protection; Safety design; Stolen vehicles; Air bag restraint systems; Energy absorbing bumpers; Bumper design; Theft prevention devices; Drinking drivers; Driver intoxication; Driver physiological test devices

5/1 Brake Systems

HS-010 344 Fld. 5/1

TRUCK AND BUS BRAKE SYSTEM PERFORMANCE REQUIREMENTS (SAE J992)

by Robert O. Tuegel

Wagner Electric Corp.

Published in HS-002 162, *Service Brake System Performance Requirements for Automotive Vehicles* (SP-299), New York, 1967 p3-9, 27-35

7 refs
Report no. SAE-680175

Presented at SAE Automotive Engineering Congress, Jan 1968. Includes Recommended Practices J992, J786 and J937 in appendix.

The new SAE J992 establishes minimum service brake system performance requirements and specifically pertains to vehicle stopping ability, pedal force requirements, and brake stability of new vehicles. Testing for SAE J992 includes procedures that were taken from applicable sections of the truck and brake system road test code, SAE J786 dated 1962. This paper compares SAE J992 and J798 in the areas of test instrumentation, preburnish check burnish, water recovery, and effectiveness requirements. Although SAE J992 is briefer than previous test procedures, it is a valid determination of minimum stopping ability, a check on the initial fade due to heat, and a measurement of the water recover characteristic. The minimum performance values specified are quite stringent for all types of trucks and buses. Test data are given.

Search terms: Brakes; Brake design Vehicle weight; Brake fade; Brake performance; Brake standards; Brake systems; Brake tests; Hydraulic brakes Air brakes; Truck brakes; Pedal force Water effect on brakes; Performance tests; Test equipment; Bus brakes Burnishing

HS-010 345 Fld. 5/1

COMPUTERIZED BRAKING

Anonymous

Published in *Road Test* v7 n9 p39-43 (Sep 1971)

With the Sure-Brake system available on Chrylser's Imperial (at $350 extra), even brakes out of adjustment bring the car to a straight, nonskid stop. An electronic sensor monitors rotation of each wheel, and if rate of slowing down indicates imminent lock-up, that brake is released momentarily. Operation is accompanied by a series of rapid clunks (four per second), and resulted in average stopping distances of 164 feet at 60 mph, good for a heavy car.

> Search terms: Sure brake; Four wheel brakes; Brake performance; Stopping distance; Sensors; Wheel locking; Vehicle control; Brake controls

HS-010 346 Fld. 5/1

BRAKING SYSTEMS FOR EFFICIENCY ON COMMERCIAL VEHICLES

by D. H. Ballard

Published in *Mass Production* v43 p107-10 (Oct 1967)

Performance and safety of brake systems on trucks and other commercial vehicles has beem improved in recent years. Existing brake systems have been redesigned for more proportionate braking forces to all axles, lag in power brakes reduced, and a number of safety devices introduced. Among these are g-matic valves to vary the applied braking in proportion to load, split brake systems and triple diaphragm brakes which retain some braking in event of partial failure, dual piston air/hydraulic actuators for similar function, automatic emergency brakes, and exhaust brakes operating independently through the transmission.

> Search terms: Brake performance; Automatic brake balancing; Triple diaphragm brake chambers; Brake system design; Automatic brakes; Truck brakes; Great Britain; Commercial vehicles

5/4 Design

HS-010 347 Fld. 5/4

STANDARDS, SAFETY AND THE AUTOMOBILE

by Louis C. Lundstrom

General Motors Corp.

1971 14p

> Presented to Gencral Federation of Women's Clubs, National Safety Conference, 6 Jan 1971.

Safer automobile design began before the 1966 National Traffic and Motor Vehicle Safety Act became law. Features briefly mentioned are: seat belts, improved windshields, energy absorbing steering columns, side beams, antitheft steering column locks and key-forgotten buzzers, luggage compartment panels, windshield heaters, and infant safety seats. Federal regulation also has promoted safety through mandatory standards as with proposed air-bag restraints and improved bumpers. The drinking driver problem is briefly described.

> Search terms: Automotive industry; Federal role; Automobile safety standards; Crashworthiness; Occupant protection; Safety design; Air bag restraint systems; Automobile design; Automobile safety characteristics; Bumper design; Drinking drivers

HS-010 348 Fld. 5/4

VEHICLE FRONTAL IMPACT ANALYSIS

by Don Buckman; Don Borland

Published in *Search* v6 n1 p1-4 (Jan-Feb 1971)

Computers are helping General Motors researchers predict how to improve passenger compartment integrity—and thus passenger safety—by varying the construction of vehicle front end components. The new analytical approach adds to the understanding of what happens in an automobile frontal impact and has reduced the number of proving ground barrier tests required. Findings help GM automobile divisions to develop forestructures which will absorb energy in a controlled manner, akin to today's energy-absorbing steering columns.

> Search terms: Front end collisions; Energy absorbing front structures; Computerized simulation; Mathematical models; Crashworthiness; Barrier collision tests; Computerized design; Safety design; Automobile design

5/6 Fuel Systems

HS-010 349 Fld. 5/6

THE INTER-INDUSTRY EMISSION CONTROL PROGRAM. PROGRESS REPORT

by S. L. Meisel

Mobil Res. and Devel. Corp.

1970 5p
Report no. AM-70-5

> Presented at the National Petroleum Refiners Assoc. Annual Meeting, San Antonio, 5-7 Apr 1970.

The joint research program begun in 1967 now has eleven oil and automobile companies, domestic and foreign. An objective of producing engine-fuel combinations that could restore the worst U.S. air basin—Los Angeles County—to pre-World War II pollution levels has been met experimentally. Three basic systems were studied: thermal-reactor afterburner, catalytic afterburner, and dual-catalyst system. Catalyst life beyond 50,000 miles was achieved with lead-free gasoline.

> Search terms: Air pollution control; Vehicle air pollution; Exhaust emission control; Carbon monoxide; Nitrogen oxides; Hydrocarbons;

5/6 Fuel Systems (Cont'd.)

HS-010 349 (Cont'd.)

Thermal reactors; Catalytic converters; Dual bed catalyst systems; Inter Industry Emission Control Program; Lead free gasoline

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HS-010 350 Fld. 5/6

MEETING FUTURE AUTOMOBILE EMISSION STANDARDS

by D. A. Hirschler; F. J. Marsee

Ethyl Corp.

1970 19p 8 refs
Report no. AM-70-5

Presented at Annual Meeting of the National Petroleum Refiners Assoc. San Antonio, 6-7 Apr 1970.

Engine modification research is described, based on the premise that the use of extremely lean fuel-air mixtures has advantages. The relation of mixture to driveability is discussed. High-velocity carburetion, ignition timing, and exhaust system modifications are described. The problem of exhaust particulates and their relation to leaded gasoline is discussed. With the use of trapping devices, leaded gasoline can meet the future standards for gaseous emissions.

Search terms: Exhaust emission control devices; Exhaust emission standards; Exhaust emission control; Hydrocarbons; Nitrogen oxides; Driveability; Carburetors; Exhaust manifold reactors; Particulate air pollutants; Engine modification; Ignition timing; Exhaust systems; Air fuel ratio; Lean fuel mixtures; Leaded gasoline

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HS-010 351 Fld. 5/6

A RELIABLE SOLUTION TO THE ENVIRONMENTAL PROBLEM: THE HYDROGEN ENGINE

by Richard G. Murray; Roger J. Schoeppel

Oklahoma State Univ.

Published in HS-010 356, *Annals of Reliability and Maintainability 1970. Vol. 9 Assurance Technology Spinoffs* p290-3

6 refs
Report no. SAE-700608

Presented at 9th Reliability and Maintainability Conference, Detroit, 20-22 Jul 1970.

Carbon dioxide, produced by most combustion processes, is often neglected as a pollutant, though it results in undesirable atmospheric changes. Moreover, supplies of fossil fuels will not meet projected energy needs. To solve this environmental crisis, a Total World Energy Management System (TWEMS) must be developed. Non-contaiminating primary energy sources are hydroelectric, wind, and nuclear power. Excess and off-peak electricity generated could produce hydrogen to power emission-free engines. A single-cylinder gasoline engine was converted to hydrogen-air and successfully operated.

Search terms: Hydrogen fuels; Engine conversion; Air pollution control; Carbon dioxide; Exhaust emission control; Internal combustion engines; Fuels; Single cylinder engines; Engine tests

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HS-010 352 Fld. 5/6

NATURE OF ODOR COMPONENTS IN DIESEL EXHAUST

by J. W. Vogh

Published in *Journal of the Air Pollution Control Association* v19 n10 p773-7 (Oct 1969)

7 refs

Offensive exhaust odors are characteristic of diesel engines. One problem in control and reduction of odor is lack of understanding of odorant sources and mode of formation. The solution of this problem depends on identification of the odorants so that study of their formation and control can be undertaken. A human panel performed odor assessments in studying raw and modified diesel exhaust and synthetic blends representing portions of diesel exhaust. Their assessments were used in determining odorant identity and quantitative contribution to exhaust odor. Low molecular weight aldehydes appear to contribute little to diesel odors. The sulfur and nitrogen oxides have been examined as odorants but of these apparently only nitrogen dioxide is a potential odor contributor.

Search terms: Air pollutants; Odorants; Diesel engine exhaust emissions; Exhaust emissions sampling; Exhaust composition; Exhaust odor control; Exhaust odors; Aldehydes; Nitrogen oxides; Hydrocarbons; Fuels; Sulfur oxides; Test equipment

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HS-010 353 Fld. 5/6; 5/15

AIR POLLUTION AND THE UTILIZATION OF NATURAL GAS IN AUTOMOTIVE VEHICLES

by W. Fruehauf

Published in *Ontario Economic Review* v7 p4-9 (Sep/Oct 1969)

Problems of environmental air pollution are discussed in relation to vehicles. The use of liquefied petroleum gas and compressed natural gas as fuels for pickup trucks and autos is discussed. These fuels would reduce air pollution. The operating costs for these fuels are compared with the costs of gasoline.

Search terms: Vehicle air pollution; Natural gas vehicles; Liquified natural gas; Compressed natural gas; Liquified petroleum gas automobiles; Fuel costs; Pickup trucks; Gasoline; Vehicle operating costs; Natural gas automobiles; Liquified petroleum gas trucks

5/10 Lighting Systems

HS-010 354 Fld. 5/10; 5/11

FEATURING . . HEADLAMP TESTING AND ADJUSTING EQUIPMENT

Anonymous

Published in *Motor Trader* v246 n3203 p661-5 (28 Dec 1966)

Headlamp adjustments are extremely critical for some of the recently introduced high-intensity lamps both for good illumination and for minimum glare. Descriptions are given of European and British equipment for adjusting headlamps, fog lamps, and spot lamps.

Search terms: Headlamp aiming; Test equipment; Headlamp alignment; Headlamp glare; Headlamp leveling; Headlamp tests; Sealed beam headlamps; Great Britain; Europe; Fog lamps; Spotlights; Auxiliary lamps

5/11 Maintenance and Repairs

HS-010 355 Fld. 5/11

BETTER MAINTENANCE. PT. 8. MAINTAINING GASOLINE ENGINES

by Dick Cross; Ed Shea

Published in *Commercial Car Journal* v121 n6 p70-7 (Aug 1971)

Premature engine death can be caused by a number of poor maintenance practices. Fleet operators should ensure that oil and filter changes are based on experience and operating conditions, that correct heavy-duty oils are used, and that positive crankcase ventilation valves are checked regularly.

Search terms: Truck maintenance; Preventive maintenance; Lubricating oils; Oil filters; Air filters; Engine operating conditions; Engine wear; Positive crankcase ventilation; Positive crankcase ventilation valves

HS-010 356 Fld. 5/11; 5/17

ANNALS OF RELIABILITY AND MAINTAINABILITY 1970. VOL. 9. ASSURANCE TECHNOLOGY SPINOFFS

Society of Automotive Engineers, Inc.

1970 688p 200 refs
Report no. SAE-P-32

Presented at the Reliability and Maintainability Conference, Detroit, 20-22 Jul 1970. Includes HS-010 351.

Assurance technology is a concept that includes reliability, quality, assurance, maintainability, safety, logistics, and human factors engineering in design, manufacturing, and operation. These papers are grouped in major categories: influencing the decision maker; assurance via test; helicopter/VTOL applications of assurance technologies; human factors; reliability education in the U. S.; nondestructive testing; program/product applications; marine and oceanic systems; logistics management; applications of systems analysis; system safety; contract/cost optimization; probabilistic design techniques; microelectronics reliability; current automobile and product spinoffs through system safety; and reliability techniques in materials and structures.

Search terms: Reliability; Tests; Maintainability; Nondestructive tests; Management; Quality control, Materials tests; Structural design; Systems analysis; Costs; Design; Probability theory; Mathematical analysis; Decision making; Statistics; Helicopters; Human factors; Electronic devices; Marine transportation; Systems engineering

AVAILABILITY: SAE

5/14 Occupant Protection

HS-010 357 Fld. 5/14; 1/3; 1/2

CONFERENCE ON ROAD SAFETY. VOL. 1. BIOMECHANICS OF ACCIDENTS

Fonds d'Etudes et de Rech. p. la Sec. Rout. (Bel.)

1968 175p

Text in English, French, Dutch, and German. Includes HS-010 358 thru HS-010 363, HS-010 316, and HS-010 364.

This volume contains: Principles of automotive crash protection; Traffic injury in urban environment; Biomechanics of head protection; Problems of biomechanics in relation with protective helmets, safety belts (for motorists) and automobile windscreens; The significance of slack in restraints of various stiffness; The structure of the human body as a limiting factor to safety-belt efficiency; Effectiveness of seat belts; Information on injuries obtained from reports of accidents to car occupants wearing safety belts; Utilization possibilities of energy-absorbing devices in order to improve the performance of restraint systems intended for passengers of a motor vehicle in case of frontal impact.

Search terms: Impact protection; Energy absorption; Crashworthiness; Restraint systems; Biomechanics; Head protection; Helmets; Injury prevention; Human body kinetics; Human body kinematics; Urban accidents; Impact tests; Occupant protection; International factors; Restraint system effectiveness; Seat belt caused injuries; Seat belt design

HS-010 358 Fld. 5/14

PRINCIPLES OF AUTOMOTIVE CRASH PROTECTION

by John P. Stapp

5/14 Occupant Protection (Cont'd.)

HS-010 358 (Cont'd.)

National Hwy. Safety Bureau

Published in HS-010 357, *Conference on Road Safety. Vol. 1. Biomechanics of Accidents,* Brussels, 1968 pA1-(1-20)

58 refs

Summaries in French, Dutch, and German.

After an historical survey and an analysis of the crash protection problem as a whole, the author makes a detailed study of the effects of crashes on the human body and the mean of avoiding injuries. Starting from the principles of package crash-protection, the behavior and resistance of the spine and other parts of the body are described, leading to the statement that disarming of crash effects has to be expected by slowing the jolt and attenuating while spreading the forces over the strongest body areas. From this point of view, a great number of results obtained by several experimenters on human volunteers, monkeys, and guinea pigs are tabulated, classified and discussed. Conclusions are presented in the form of five design principles for vehicles, seats, and restraining systems. In particular, suggestions are advanced for replacing webbing restraints by isovolumetric systems.

Search terms: Impact protection; Occupant protection; Impact attenuation; Energy absorbing systems; Crashworthiness; Safety design; Human deceleration tolerances; Test volunteers; Laboratory tests; Impact tests; Restraint systems; Human body kinematics; Roadside hazards; Animal experiments; Injury prevention

HS-010 359 Fld. 5/14

BIOMECHANICS OF HEAD PROTECTION

by G. G. Snively; S. A. Snively

Snell Memorial Foundation, Inc.

Published in HS-010 357, *Conference on Road Safety. Vol. 1. Biomechanics of Accidents,* Brussels, 1968 pA3-(1-15)

5 refs
Grant UI-00002-10

Summaries in French, Dutch, and German.

Requirements of usage which must be considered in the design of helmets are presented, and some explanations given of the biomechanical princples involved in meeting these needs. The relationships of various protection materials and systems to basic principles of energy transfer are discussed, and some considerations are given to animal experiments in the study of head injury. A brief analysis is presented of field data from approximately 300 accidents involving road user helmets. Correlation of injury to site and number of impacts, vehicle velocity, and impact energy absorbed is made.

Search terms: Biomechanics; Head protection; Helmets; Animal experiments; Head injuries; Energy absorbing materials; Helmet design; Injury prevention; Brain concussion; Head impact tolerances; Fatalities; Impact forces

HS-010 360 Fld. 5/14

BIOMECHANISCHE FRAGESTELLUNGEN IN BEZUG AUF SCHUTZHELME, SICHERHEITSGURTZEUGE (FUR AUTOMOBILISTEN) UND WINDSCHUTZSCHEIBEN IM AUTOMOBILBAU (PROBLEMS OF BIOMECHANICS IN RELATION WITH PROTECTIVE HELMETS, SAFETY BELTS (FOR MOTORISTS) AND AUTOMOBILE WINDSCREENS)

by D. Ziffer

Published in HS-010 357, *Conference on Road Safety. Vol. 1. Biomechanics of Accidents,* Brussels, 1968 pA4-(1-20)

Text in German. Summaries in English, French, and Dutch.

Before making safety devices for the human body, it is necessary to know the degree of vulnerability of the body and its constituent parts. In principle, to determine these characteristic data, one proceeds in the same way as for technical testing of materials. Reactions and resistance stress must, as much as possible, be studied under realistic conditions while effectively making use of parts of the human body. The same principle must be applied when manufacturing protective helmets and safety belts, when choosing materials and when making motor-vehicle windscreens in order to collect information about the working and protective value of the different devices through experiments as realistic as it is possible to make them.

Search terms: Safety devices; Helmets; Safety belts; Windshields; Human body impact tolerances; Human body kinematics; Biomechanics; Impact tests; Energy absorbing materials; Germany

HS-010 361 Fld. 5/14

THE SIGNIFICANCE OF SLACK IN RESTRAINT OF VARIOUS STIFFNESS

by B. Aldman; A. Asberg

Statens Trafiksakerhetsrad (Sweden)

Published in HS-010 357, *Conference on Road Safety. Vol. 1. Biomechanics of Accidents,* Brussels, 1968 pA5-(1-19)

18 refs

Summaries in French, Dutch, and German.

The response of a restrained car occupant to deceleration patterns recorded at barrier impacts with some European cars is studied by using a simple model in an analog computer. In order to illustrate the general influence of restraint characteristics and slack the occupant· is defined as one solid mass and restraints are characterized by linear load-elongation functions of different stiffness. Peak accelerations and total displacements of the occupant as a function of slack are given.

Search terms: Occupant kinetics; European vehicles; Occupant protection; Child restraint systems; Seat belt tests; Seat belt slack; Human deceleration tolerances; Barrier collision tests; Webbing; Computerized simulation; Energy absorbing materials; Crashworthy bodies; Padding; Sweden

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HS-010 362 Fld. 5/14

DE BOUW VAN HET MENSELIJK LICHAAM ALS BEPERKENDE FACTOR VOOR HET GEBRUIK VAN VEILIGHEIDSGORDELS (THE STRUCTURE OF THE HUMAN BODY AS A LIMITING FACTOR TO SAFETY-BELT EFFICIENCY)

by F. van Faassen

Vrije Univ., Amsterdam (Netherlands)

Published in HS-010 357, *Conference on Road Safety. Vol. 1. Biomechanics of Accidents,* Brussels, 1968 pA6-(1-4)

Text in Dutch. Summaries in English, French, and German.

Grievances heard against the use of safety belts derive from the onesided way they fix the human body so that the different parts of it are not uniformly decelerated. The analysis of the possible movements and the deformation of inner organs, make it possible from the medical point of view, to establish the advantages and disadvantages of each type of safety-belt.

Search terms: Human deceleration tolerances; Human body center of mass; Human body kinetics; Restraint system effectiveness; Seat belt effectiveness; Seat belt loading; Seat belt medical factors; Seat belt usage; Netherlands

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HS-010 363 Fld. 5/14

HET EFFEKT VAN AUTOGORDELS (EFFECTIVENESS OF SEATBELTS)

by J. C. Bastiaanse

Rijksverdedigingsorganisatie TNO (Netherlands)

Published in HS-010 357, *Conference on Road Safety. Vol. 1. Biomechanics of Accidents,* Brussels, 1968 pA7-(1-13)

14 refs

Text in Dutch. Summaries in English, French, and German.

The publication regards particulars of accidents with automobiles. The effectiveness of different types of seat belts is considered. A general view is given with respect to the way of wearing seat belts. Finally, a comparison is made of belted and un-belted car occupants.

Search terms: Automobile accidents; Three point restraint systems; Seat belt effectiveness; Shoulder harnesses; Injury prevention; Occupant protection; Seat belt positioning; Seat belt usage; Restraint system effectiveness; Netherlands

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HS-010 364 Fld. 5/14

POSSIBILITES D'UTILISATION DES DISPOSITIFS ABSORBEURS D'ENERGIE POUR AMELIORER LE FONCTIONNEMENT DES SYSTEMES DE RETENUE DES PASSAGERS D'UN VEHICULE AUTOMOBILE EN CAS DE CHOCS FRONTAUX (TIULISATION POSSIBILITIES OF ENERBY ABSORBING DEVICES IN ORDER TO IMPROVE THE PERFORMANCE OF RESTRAINT SYSTEMS INTENDED FOR PASSENGERS OF A MOTOR VEHICLE IN CASE OF FRONTAL IMPACT)

by M. H. Le Guen

Union Tech. de l'Auto., du Motorcycle et du Cycle

Published in HS-010 357, *Conference on Road Safety. Vol. 1. Biomechanics of Accidents,* Brussels, 1968 pA9-(1-21)

7 refs

Text in French. Summaries in English, Dutch, and German.

The now-existing safety belts have essentially been conceived for restraining a passenger, so as to prevent his coming in contact with the instrument panel. To be entirely efficient, however, it is indispensable that the restraining device should absorb and dissipate the energy stored by the passenger. Means and devices to attain this effect include: choice and processing of the fiber that is to make up the strap, different modes of weaving this fiber, hydraulic or other damping devices acting on the belt fastenings, devices included in the seats, exterior appliances like inflatable bags, and lastly and accessorily, windscreens, padding of instrument panels, etc. These devices will certainly, in future, improve the efficiency of safety belts and help to spread the use of this means of protection.

Search terms: Occupant protection; Webbing; Occupant kinetics; Kinetic energy; Seat belt design; Seat belt assemblies; Seat belt buckles; Energy absorbing materials; Seat belt assembly anchorages; Damping; Air bag restraint systems; Windshields; Instrument panel padding; Restraint system effectiveness; Speed; Friction; Energy absorption; Impact attenuation; Deformation; Hydraulic equipment; Injury prevention

5/15 Propulsion Systems

HS-010 365 Fld. 5/15

YOUR CAR WILL RUN ON LPG!

Anonymous

Published in *Road Test* v5 n12 p62-5 (Dec 1969)

5/15 Propulsion Systems (Cont'd.)

HS-010 365 (Cont'd.)

Liquified petroleum gas (LPG) conversions for automobiles are claimed to reduce engine maintenance and need for oil changes while drastically cutting pollution. Installations may be for LPG only or dual systems to permit switching to gasoline when LPG is unavailable. Refueling stations are scarce. Other problems are initial cost, bulk of the LP gas tanks, and possibly hazards of the pressurized tanks. The fuel costs less than gasoline and consumption is about the same. Fleet use is increasing and is the most practical present application for LPG.

Search terms: Liquified petroleum gas automobiles; Liquified petroleum gas trucks; Engine conversion; Fuel costs; Dual fuel vehicles; Fuel consumption

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HS-010 366 Fld. 5/15

THE THERMAL PERFORMANCE OF FLUIDS IN A RANKINE CYCLE POWER PLANT FOR AUTOMOTIVE APPLICATIONS

by H. L. Solberg; Keith H. Hawks

Purdue Univ.

3 May 1971 36p 3 refs

Nine fluids were selected from a list of 53 for a study of their thermal performance in a Rankine cycle power plant. Five of these nine fluids were selected for a further study of the effects of such factors as regenerative feed-liquid heating, changes in operating pressures and temperatures, feed-pump efficiency, engine efficiency, boiler efficiency, and condenser capacity. Of the fluids studied, steam, CP 34, and Freon 113 showed the best performance in that order.

Search terms: Steam engines; Boilers; Engine performance; Condensers; Operating temperature; Fuel pumps; Thermal efficiency; Thermodynamic properties; Mathematical analysis; Rankine cycle engines; Freon engines; Engine operating conditions; Operating pressure

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HS-010 367 Fld. 5/15

PRESENT STATUS OF ELECTRIC AUTOMOBILES

by J. J. Gottlieb

National Res. Council of Canada

1970 36p 115 refs
Report no. DME/NAE-1970-(4)

The future of the electric passenger automobile is uncertain. Its comeback may be effected as a method to control air pollution, since gasoline automobiles contribute roughly 40% of the atmospheric pollutants. This study of the present state-of-the-art of electric vehicles includes developments in batteries, fuel cells and hybrid systems, controllers, chargers, electric motors, and body design features. Inadequate electric power sources limit present vehicles to short distances; development of long distance automobiles will require greatly expanded research.

Search terms: State of the art studies; Electric automobiles; Electric automobile design; Electric automobile range; Electric drive systems; Electric motors; Propulsion systems; Hybrid automobiles; Batteries; Regenerative braking; Battery charging; Battery design; Fuel cells; Experimental vehicles; Engine performance; Automobile performance; Battery heaters

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5/22 Wheel Systems

HS-010 368 Fld. 5/22

IT'S THE RADIAL AGE!

by Richard Senter

Published in *Road Test* v7 n9 p58-61 (Sep 1971)

More imported cars and many domestic cars carry radial tires as standard equipment. Construction of radials is explained, some makes are discussed, and reasons given for their superior performance. Their advantages are even greater on smaller cars. Usage of radials on racing cars is discussed.

Search terms: Radial tires; Tire characteristics; Tire performance; Tire design; Tire road conditions; Tire wear; Wet road conditions; Compact automobiles; Racing automobiles

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HS-010 369 Fld. 5/22

TIRE SAFETY: WHERE THE ACTION IS

by Charles Laverty

Published in *Rubber World* v161 n6 p61-3 (Oct 1969)

Emphasis on consumer safety has resulted in 85,000 recals by mid-year, one tire per thousand produced. The tire industry is moving to meet the challenge by stepped up testing. Within three years, nearly 360 tire test wheels will be in action. Government tests revealed an 18% failure rate, but tire manufacturers called the figures grossly misleading and cited an industry adjustment rate of 2%.

Search terms: Tire standards; Tire tests; Tire test equipment; Tire recall campaigns; Tire safety; Tire industry; Compliance tests; Tire failures; Defective tires

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NHTSA DOCUMENTS

NHTSA Contractors Reports

HS-800 535 Fld. 3/2; 5/14

ANTHROPOMETRY FOR CHILD RESTRAINTS. FINAL REPORT

by Howard W. Stoudt

Harvard School of Public Health

Jul 1971 65p 90 refs
Contract FH-11-7333

Review and discussion of anthropometric inputs which will describe children for purposes of crash kinematic modeling and construction of anthropometric dummies for use in crash tests. In addition, techniques for obtaining such data are described. Two lists of measurements needed for dummy and mathematical model construction were developed. One lists 43 body dimensions considered to be a bare minimum of those needed. The other more comprehensive list contains 196 body measurements, few of which are presently available for children. The selection of subjects to be described anthropometrically is also a major problem. In addition to anthropometric data, biomechanical data are also needed for children.

Search terms: Mathematical models; Human body simulation; Anthropometry; Child restraint systems; Anthropometric dummies; Anthropomorphic dummy design; Biomechanics; Human body mass; Human body kinematics; State of the art studies; Children; Human body size; Manikins

AVAILABILITY: NTIS

HS-800 549 Fld. 1/2

IMPACT TOLERANCE–ABDOMINAL INJURY. FINAL REPORT

by D. L. Beckman; J. H. McElhaney; V. L. Roberts; R. L. Stalnaker

Michigan Univ. Hwy. Safety Res. Inst.

1971 325p 1,252 refs
Contract FH-11-7608
Report no. HSRI-71-102

Report for 1 Jul 1970 – 30 Jun 1971.

In order to provide data on human tolerance to blunt abdominal impact, a literature study and laboratory tests were carried out to determine the major causes of abdominal injury, injury mechanisms, a quantitative relationship between input and occurrence of trauma and to develop the criteria to recommend performance requirements for materials which often produce blunt abdominal injury. An extensive analysis of case reports indicated that the most frequent causes of blunt abdominal injury were the steering wheel, seat belt, and various protruding objects in a vehicle; the organs most often injured were the liver, pancreas, spleen, and intestine. However, the results indicate that the vervet monkey can survive blunt impacts to the upper abdomen with the various impactors used at velocities up to 22 mph, while in the midabdomen it can survive impacts of this type of approximately 26 mph and in the lower abdomen of 34 mph. A bibliography of 1,252 citations in English and 21 foreign languages is included.

Search terms: Abdominal injuries; Abdominal impact tolerances; Animal impact tolerances; Impact tests; Animal experiments; Monkeys; Liver injuries; Pancreatic injuries; Splenic injuries; Intestinal injuries; Injury case reports; Impact velocity; Steering wheel caused injuries; Seat belt caused injuries; Injury research; Secondary collisions; Reviews; Mathematical analysis; Laboratory tests

AVAILABILITY: NTIS

HS-800 574 Fld. 4/5

A THREE-DIMENSIONAL COMPUTER SIMULATION OF A MOTOR VEHICLE CRASH VICTIM. PHASE 1. DEVELOPMENT OF THE COMPUTER PROGRAM. FINAL REPORT

by John A. Bartz

Cornell Aeronautical Lab., Inc.

1971 325p refs
Contract FH-11-7592
Report no. CAL-VJ-2978-V-1

A digital computer program to simulate a motor vehicle crash victim, either occupant or pedestrian, in three dimensions is currently under development. The dynamics model of forty-degrees-of-freedom consists of fifteen rigid body segments connected by ball-and-socket and pinned joints, and includes spring and dissipative torques at the joints to simulate muscle tone. Provision is made within the formulation to alter the number of segments and joints of the model. A contact model was developed to simulate external forces acting on the crash victim, including forces caused by contact with vehicle surfaces, between body segments, and restraint forces from both belt and inflatable types of restraint systems. A graphics display model produces orthogonal views of the victim from both an off-line plotter graphics routine and a simplified printer graphics display, developed as a diagnostic tool. An injury criteria model has been developed to provide a means for readily assessing the degree of injury sustained by the simulated crash victim.

Search terms: Computerized simulation; Digital computers; Simulation models; Human body simulation; Anthropometric dummies; Injury research; Accident simulation; Impact tests; Mathematical models; Dynamic models; Injury severity; Air bag restraint systems; Seat belts; Mathematical analysis; Degrees of freedom; Computer programs; Impact forces; Human body segment parameters; Torque; Secondary collisions; Computerized design; Occupant modeling

AVAILABILITY: NTIS

HS-800 585 Fld. 5/14

MOTIVATING FACTORS IN THE USE OF RESTRAINT SYSTEMS. FINAL REPORT

by Petterson Marzoni, Jr.

National Analysts, Inc.

NHTSA Contractors Reports (Cont'd.)

HS-800 585 (Cont'd.)

1971 100p
Contract FH-11-7610

This study has undertaken qualitative and quantitative inquiry among licensed automobile drivers to determine attitudes, behaviors, and rationales that are relevant to restraint systems use. Moreover, it has identified target groups of drivers, by attitudinal patterns and other less salient characteristics, to whom further educational and/or promotional efforts can be addressed most efficiently to increase the use of restraint systems. Finally, analysis of the study data has suggested some procedures for implementing its conclusions most effectively. Among the variables in restraint system usage are: trip length, eudcational level, personality pattern, driving experiences, attitudes toward driving skills. Multivariate factor analysis of interviews was used to study the data.

Search terms: Seat belt usage; Shoulder harness usage; Restraint system usage; Driver attitudes; Psychological factors; Driver educational levels; Driver experience; Driver skills; Statistical analysis; Driver attitudes; Multivariate analysis; Motivation research; Driver personality; Interviews; Trip length

AVAILABILITY: NTIS

NHTSA Staff Speeches, Papers, etc.

HS-810 177 Fld. 3/1

REDI: TO ATTACK ALCOHOL–RELATED HIGHWAY CRASHES

by Charles H. Hartman

National Hwy. Traf. Safety Administration

1971 20p

Presented at 39th annual AAMVA International Conference, New York City, 22 Sep 1971.

Research, education, demonstration, and implementation (REDI) make up the alcohol countermeasures program. Research develops educational, enforcement, and treatment countermeasures for state programs. Education improves public awareness of problem drinking-driving and social drinking-driving and of countermeasure programs. Demonstration focuses on Alcohol Safety Action Projects (ASAP). Implementation requires transition of projects to Federal-state matching grants, and finally, to state and local funding.

Search terms: Alcohol education; Alcohol usage deterrents; Drinking drivers; Driver intoxication; Federal state relationships; Financing; Local government; Demonstration projects; Safety propaganda; Alcoholism; Social drinking; Community support; State government

AVAILABILITY: NHTSA

HS-810 180 Fld. 3/1

THE U.S. GOVERNMENT NATIONAL HIGHWAY SAFETY BUREAU PROGRAM IN ALCOHOL SAFETY RESEARCH

by R. V. Voas

National Hwy. Safety Bureau

[1969] 4p

Prepared for presentation at the 5th International Conference on Alcohol and Traffic Safety, Frieburg, Germany, 22-27 Sep [1969].

Studies to determine whether there is any distinguishing biographical, psychological or medical variables peculiar to an individual prior to his becoming a highway fatality have been funded by the National Highway Safety Bureau in four American universities. It became apparent from these studies that the majority of convicted drinking driver had previous arrests and that this group of drinking drivers may be less involved in highway fatalities than had been believed. Future research will focus on developing specific countermeasures for the alcohol related highway fatality program through detection and by using the results of laboratory tests on alcohol induced performance as related to an individual's personality and background It is hoped that treatment programs can be developed tailored to the change alcohol produces on the character of the individual.

Search terms: Safety campaigns Alcohol usage; Psychological factors Personality; Fatalities; Driver behavior Drinking drivers; Driver intoxication

NHTSA Imprints

HS-820 164 Fld. 4/4; 1/5

HIGHWAY AND TRAFFIC SAFETY 1970. A REPORT ON THE ACTIVITIES OF THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION AND THE FEDERAL HIGHWAY ADMINISTRATION UNDER THE HIGHWAY SAFETY ACT OF 1966 AND THE NATIONAL TRAFFIC AND MOTOR VEHICLE ACT OF 1966. SUMMARY

National Hwy. Traf. Safety Administration

1971 54p

For detailed reports on the administration of the National Traffic and Motor Vehicle Safety Act of 1966 and the Highway Safety Act of 1966, see HS-820 165 and 820 166.

Activities for the year are summarized under the following headings: traffic safety—the people's program; the story told in numbers; a challenge to save lives priority programs; motor vehicle safety —1970; highway safety in the states and communities; research and the advancing technology; special programs; and where we stand–past and prologue.

Search terms: Accident statistics; Highway safety; Highway Safety Act of 1966; National Traffic and Motor Vehicle Act of 1966; Drinking drivers; Federal Highway Administration; Highway safety programs; Vehicle safety; State action; Accident location; Consumer education; Priorities; Pedestrian safety; National Driver Register; Fatality prevention; Safety design; Safety cars; Accident investigation; Community support; Accident survivability; Experimental vehicles; Crashworthiness; Fatality rates; National Highway Traffic Safety Administration; Energy absorption; Recall campaigns; Federal laws

AVAILABILITY: GPO by title, $1.00

HS-820 165 Fld. 4/4; 1/5

1970 REPORT ON ACTIVITIES UNDER THE NATIONAL TRAFFIC AND MOTOR VEHICLE SAFETY ACT OF 1966. VOL. 2

National Hwy. Traf. Safety Administration

1970 135p

Summary report is HS-820 164.

This volume supplements the summary report on the 1970 progress under the act. It includes a statistical compilation of accidents and injuries during the year, a list of federal motor vehicle safety standards, the degree of observance of he standards, a summary of current esearch grants and contracts and their problem areas, evaluation and policy ecommendations of completed research and technological progress, summary of enforcement actions and litigation pending, and reports on the dissemination of information to the public and scientific communities.

Search terms: National Traffic and Motor Vehicle Act of 1966; Federal laws; Safety standards; Safety standards compliance; Vehicle safety; National driver register; Safety design; Safety device effectiveness; Safety programs; Safety research; Highway safety; Accident statistics; Financing; Consumer education; Priorities; Crashworthiness; Recall campaigns; Legal factors; National Highway Traffic Safety Administration; Safety cars; Passive restraint systems; Impact tests; Occupant protection; Underride override collisions; Accident investigation; Fatality rates; Sex factors; Age factors; Accident types; Forecasting; Accident severity; Accident rates; Motorcycle accidents; Time of accidents; Bicycle accidents

HS-820 166 Fld. 4/4; 1/5

1970 REPORT ON ACTIVITIES UNDER THE HIGHWAY SAFETY ACT OF 1966. VOL. 2

National Hwy. Traf. Safety Administration

1970 130p

Summary report is HS-820 164

This volume supplements the summary report, describing in more detail the 1970 progress under the act. It includes a statistical compilation of accidents and injuries during the year, a list of federal safety standards, the degree of observance of the standards, enforcement actions and pending litigation, research grants and contracts with their problem areas, evaluation and policy recommendations on completed research and technological progress, effectiveness of state and local highway safety programs, and reports on the dissemination of information to the public and scientific communities.

Search terms: Highway Safety Act of 1966; Highway design; Vehicle registration; Driver education; Driver licensing; Traffic records; Traffic courts; Emergency medical services; Federal laws; Safety standards; Safety standards compliance; Vehicle safety; Safety design; Safety programs; Safety research; Highway safety; Accident statistics; Financing; Legal factors; Safety program effectiveness; Consumer education; State action; Community support; Drinking drivers; Accident location; Traffic control devices; Police traffic services; Accident investigation; Age factors; Sex factors; Fatality rates; Forecasting; Accident types; Motorcycle accidents; Urban accidents; Bicycle accidents; Time of accidents

AVAILABILITY: GPO by title, $1.25

HS-820 168 Fld. 2/9

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS

Federal Hwy. Administration

1971 400p refs

Developed in cooperation with American Association of State Highway Officials, National Joint Committee on Uniform Traffic Control Devices, Institute of Traffic Engineers, National Committee on Uniform Traffic Laws and Ordinances, National Association of Counties, and National League of Cities.

The 1970 revision of this manual makes wider use of symbols, more color coding in signs and in pavement markings to define direction of travel, updated standards for traffic signals. The book is profusely illustrated in the coded colors. Sections cover: signs; markings; signals; islands; traffic controls for street and highway construction and maintenance operations; and traffic controls for school areas.

Search terms: Colored pavements; Sign color; Signals; Direction signs; Traffic signals; Traffic signs; Color coding; Symbols; Warning signs; Manual on Uniform Traffic Control Devices for Streets and Highways; Traffic control device uniformity; Sign uniformity; Traffic signal uniformity; Pavement markings; Construction sites; School zones; Road islands; Pedestrian crossings

AVAILABILITY: GPO by title, $3.50

executive summary

A SYNPOSIS OF A RECENTLY RELEASED NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION RESEARCH F

EXPANSION OF VOCATIONAL–TECHNICAL SCHOOL PROGRAMS TO ACCOMMODATE HIGHWAY SAFETY MANPOWER REQUIREMENTS

FINAL REPORT – August 1971

The purpose of this project was for the expansion of vocational-technical school programs to accommodate safety manpower requirements; for updating existing training programs related to highway safety; and for stimulating development of additional programs in new and emerging occupations related to the field.

Contract FH-11-7507
Center for Vocational-Technical Education
The Ohio State University
1900 Kenny Road
Columbus, Ohio 43210

Award Amount: $90,332
Contract Research Period:
June 1, 1970 through May 31, 1971
Final Report Dated: August, 1971

DOT/HS-800 533 FINAL REPORT

DOT/HS-800 554 HIGHWAY SAFETY OCCUPATIONAL PROGRAM DEVELOPMENT GUIDE

DOT/HS-800 555 SAFETY STANDARDS RESOURCE MATERIAL Volume I
DOT/HS-800 556 SAFETY STANDARDS RESOURCE MATERIAL Volume II
DOT/HS-800 557 SAFETY STANDARDS RESOURCE MATERIAL Volume III
DOT/HS-800 558 SAFETY STANDARDS RESOURCE MATERIAL Volume IV

Contract Requirements – Summarized

1. Provide the National Highway Traffic Safety Administration (NHTSA) with information concerning the nature and scope of public vocational and technical education programs directed toward meeting safety manpower needs.

2. Present current and projected highway safety manpower to key vocational-technical educators.

3. Develop plans and strategies for initiating additional programs in existing, new, and emerging occupational areas relating to highway safety.

4. Identify ways in which resources of NHTSA and the Vocational Education Act might effectively be applied to mutual interests of public education and highway safety.

Background in Support of Project

The problem of providing highway safety seems to stem, in part, from the lack of trained personnel. Studies indicate that the majority of the jobs in this field are at a skilled or technical (sub-baccalaureate) rather than professional levels. These studies, in dealing with formal highway safety education and training, do not focus on the feasibility of community colleges, technical institutes, and area vocational schools.

At the present time, there exists only a limited number of institutions offering sub-baccalaureate-level occupational training related to highway safety manpower needs. Occupational training for jobs requiring less than a degree is needed on a massive scale to meet existing and emerging needs.

Project Tasks

To meet the objectives, the following tasks were performed:

1. Established a model relating highway safety programs (State Standards) to technical and skilled manpower, and these, to training programs.

2. Surveyed and analyzed existing vocational and technical training programs, training materials, and resources.

3. Further interpreted program status:

   a. identified sixty vocational technical educators as participating consultants

   b. developed in-service training materials for orientation to NHTSA manpower programs, other existing curricula, and program developments

   c. conducted three-day workshops after completion of in-service training of consultants

   d. reviewed, analyzed, and reported project findings with recommendations.

FINDINGS

Safety Standards

The sixteen Standards established under the Highway Safety Act imply to varying extents the involvement of personnel whose education and training is required to be only at a level below the baccalaureate degree. Of these, the Standards for Codes and Laws, Traffic Courts, and Motor Vehicle Registration are not identified with technically trained safety specialists. Technical competencies are required in other Standards:

Periodic Motor Vehicle Inspection
Motorcycle Safety
Driver Education
Driver Licensing
Alcohol in Relation to Highway Safety
Identification and Surveillance of Accident Locations
Emergency Medical Services
Highway Design, Construction, and Maintenance
Traffic Control Devices
Pedestrian Safety
Police Traffic Services
Debris Hazard Control and Cleanup
School Bus Safety

Job Titles and Manpower Data

The Dictionary of Occupational Titles does not contain most of the highway safety occupations identified by manpower studies. Many of the requirements are job functions rather than complete occupations in themselves.

Manpower data includes present employment figures, actual and projected job openings, job classifications, and job entry level requirements.

Their is an absence of a central identifiable authority for local area highway safety programs.

Training Programs

Retraining, upgrading, and short-course instruction is frequently conducted internally by highway safety agencies. While vocational-technical education institutions, likewise, may offer this type of program, there is an unmet need for pre-employment and long-term education and training in highway safety occupations and job functions.

The U.S. Office of Education reported enrollments which were classified as in either technical occupations or in trade and industrial occupations. Part-time technical enrollment in 1969 was 102 thousand and part-time trade and industrial was 802 thousand. Full-time enrollment in technical occupations was 176 thousand and in trade and industrial occupations 281 thousand. All were at the post-secondary level. Included were several occupations related to safety Standard manpower.

Curriculum and instructional materials were discovered to be sufficient, available in limited numbers, or almost completely lacking depending upon the occupations examined. Sufficient material exists for emergency medical technician-ambulance, motor vehicle inspection, school bus driving, and driver education. Limited materials are available in engineering technology, traffic engineering technology, and accident site investigation.

There is a lack of materials to train breath examiner specialists, traffic patrolmen, driver license examiners, and debris hazard control personnel. The National Highway Traffic Safety Administration is currently developing packages in all but the last of these.

Selected participant-consultants from community colleges and technical institutes identified four goals for local vocational-technical education programs in highway safety occupations; seek information, determine need, create awareness, and implement highway safety training in existing programs or develop new programs.

Vocational-technical education has the capacity for, and will accept in part, the charge and challenge of providing programs to accommodate highway safety manpower requirements.

Recommendations

- Highway Safety and State and Local Programs
  - An effort should be made to have highway safety representatives on State and national vocational and technical education advisory committees. These committees should have data indicating manpower needs, forecasts, and present training capacities for highway safety occupations.
  - A team of State and local highway safety authorities and vocational-technical educators should be drawn together in those States with the greatest highway safety manpower needs to develop a statewide plan for highway safety manpower development.
  - The vocational and technical education authorities at the local and State levels should work with highway safety authorities to determine the priority of highway safety manpower needs in relation to other local and State manpower needs.
- Highway Safety Occupations
  - Additions or revisions in the Dictionary of Occupational Titles should be made to identify the occupations within the highway safety area. This should aid in standardizing the occupational classifications within the highway safety work force.
  - The NHTSA should continue to develop a task analysis for each highway safety occupational category and to provide these analyses to agencies or institutions for the purpose of developing an instructional analysis and implementing an educational training program.
  - Additional NHTSA manpower development funds should be made available to gather manpower data and perform job and task analysis. This information should serve to facilitate the appropriate expenditures of other manpower development funds within highway safety occupational preparation.
  - Highway safety specialists and authorities should assist local vocational and technical education administrators to identify the priority needs in highway safety occupations, to identify the occupational classifications, and to specify the local job openings available for trained people in these occupations.
  - Additions or revisions in the U.S. Office of Education Occupational Codes list should identify the occupations within the highway safety area. This would aid in the annual reporting of training within the highway safety area and the acquisition of data necessary for manpower development.
- Career Literature
  - Additional literature and informational programs identifying career opportunities in the skilled and technical highway safety occupations should be developed and made available to potential students, school counselors, and parents.
  - Career opportunities in highway safety occupations should be written into the occupational exploration and orientation curricula being developed by many school systems for the kindergarten through tenth grade levels of education.
- Training Programs
  - The public education system for vocational and technical education should be called upon to provide manpower development for those highway safety occupations with the greatest priority needs and for which this level of training is most applicable.
  - Vocational and technical education institutions must provide training programs to accommodate a variety of manpower needs in highway safety. These programs may range from the two-year associate degree level to a certificate program to a short course for upgrading or retraining. The educational program must be designed specifically to prepare

individuals for identified job openings or needs.

  - Vocational and technical education funds should be provided to expand, extend and/or develop highway safety occupational programs where identifiable local and State priorities so indicate. Several of the highway safety occupational programs would be appropriate expenditure of funds from the 1968 Vocational Education Amendments for new and emerging occupations.

  - Competent highway safety operations people with an interest in and qualifications for teaching should be identified as possible instructors for future occupational preparation programs in highway safety.

  - Training institutes for preparing instructors of highway safety occupational programs to effectively utilize newly developed NHTSA instructional materials should be planned and held to expedite updating and development of occupational preparation programs.

- Curriculum and Materials

  - A task analyses study should be made for each of the highway safety occupations to determine the commonality of tasks among the various occupations. If sufficient commonality does exist, core curricula should be developed for efficienty and effectiveness in training programs.

  - Additional course guides and curriculum materials should be developed in those occupational areas where present materials are absent or unacceptable to the occupational field. These guides and materials should be based on a task analysis of the occupations for which training is to be conducted.

  - All course guides, instructor's manuals and other curriculum materials for highway safety occupational programs should be documented in the Vocational and Technical Education Resource Information Center (ERIC). This documentation will enable educators to have access to the materials through the ERIC dissemination system and through the Abstracts of Instructional Materials published by The Center for Vocational and Technical Education, The Ohio State University.

The Contract Technical Manager has certified that the contractor's work has been satisfactorily completed and that all contractual obligations have been met.

The opinions, findings, and conclusions expressed in this summary are those of the contractor and not necessarily those of the National Highway Traffic Safety Administration.

Availability: NTIS. May be ordered in paper copy (PC) @ $3.00 per volume or microfiche (MF) @ $0.95 per volume.

Order: DOT/HS-800 553 – Final Report
DOT/HS-800 554 – Highway Safety Occupational Program Development Guide
DOT/HS-800 555 – Safety Standards Resource Material Volume I
DOT/HS-800 556 – Safety Standards Resource Material Volume II
DOT/HS-800 557 – Safety Standards Resource Material Volume III
DOT/HS-800 558 – Safety Standards Resource Material Volume IV

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U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

Research Institute, Office of Accident Investigation and Data Analysis

WASHINGTON, D.C. 20590

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